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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/815,419

04/01/2004

Shintaro Honjo

OKUYAM 3.0-008

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530 7590 05/29/2008
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EXAMINER

CHEN, CHRISTINE

ART UNIT

PAPER NUMBER

1793

MAIL DATE

DELIVERY MODE

05/29/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/815,419	Applicant(s) HONJO ET AL.	
	Examiner CHRISTINE CHEN	Art Unit 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 March 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) 5-8 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>10/12/07</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Restriction Acknowledgement

1. Applicant's election without traverse of group I, corresponding to claims 1-4, in the reply filed on March 10, 2008 is acknowledged. Claims 5-8 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iida (JP10230137) combined with Higuchi (US5009871).

Iida discloses a method for removing mercury in exhaust gas, in which mercury in exhaust gas discharged from combustion equipment is removed, comprising:

a mercury oxidation process in which mercury in said exhaust gas is converted to mercury chloride in the presence of a catalyst; and

a contact process in which said exhaust gas is brought into contact with an absorbing solution in a scrubber to absorb and remove mercury components from said exhaust gas (see English abstract).

Iida teaches all the claim limitations above except for the control process step.

Higuchi discloses a method for removing mercury in exhaust gas, which includes:

a contact process in which exhaust gas is brought into contact with an absorbing solution (i.e. washing liquid) in a scrubber to absorb and remove mercury;

a control process step in which an addition of an oxidizing agent into said scrubber is accomplished, and the added amount of oxidizing agent is regulated to control the oxidation-reduction potential of said absorbing agent; and

an effluent treatment process step in which products in said absorbing solution are oxidized by an acid (see col. 3 li. 39-col. 4 li. 68).

It would have been obvious to one of ordinary skill in the art to add both the control process step and effluent treatment process step of Higuchi to the method of Iida in order to prevent corrosion of the scrubber due to the volatilization of metallic mercury.

3. Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Iida (JP10230137) and Higuchi (US5009871) in view of Kawakami (JP2191526).

Neither Iida nor Higuchi disclose the detection of mercury concentration in the control process step as seen in paragraph 2 above.

Kawakami discloses a method for removing mercury in exhaust gas, which includes:

a contact process in which exhaust gas is brought into contact with an absorbing solution (i.e. washing liquid) in a scrubber to absorb and remove mercury; and

a control process in which the addition of oxidizing agent (i.e. hypochlorite) into said scrubber is accomplished, and a mercury concentration at the outlet of said

scrubber is detected to control the added amount of oxidizing agent (see English abstract).

It would have been obvious to one of ordinary skill in the art to one of ordinary skill in the art to add the detection of mercury concentration of Kawakami to the control step of Higuchi which is added in combination with an effluent treatment step to the method of Iida in order to prevent the supply of an excess amount of oxidizing agent.

4. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Iida (JP10230137) and Higuchi (US5009871) in view of Honjo (US2001/0007647) or the combination of Iida (JP10230137) and Higuchi (US5009871) and Kawakami (JP2191526) in view of Honjo (US2001/0007647).

Iida, Higuchi, and Kawakami do not disclose a second gas-liquid contact process as seen in paragraphs 2 and 3 above.

Honjo discloses a method for removing mercury in exhaust gas comprising:

a contact process in which exhaust gas is brought into contact with an absorbing solution in a two-tower type desulfurizing absorption tower (see abstract and [0031]).

A two-tower type desulfurizing absorption tower allows for two gas-liquid contact process steps, wherein each tower allows for a gas-liquid contact process step.

It would have been obvious to one of ordinary skill in the art to include a second gas-liquid contact process step as taught by Honjo in the method of Iida with the additional control and effluent treatment steps of Higuchi for the further removal of mercury.

Similarly, it would have been obvious to one of ordinary skill in the art to add a second gas-liquid contact process step to the method of Iida modified with the control and effluents steps of Higuchi wherein the control step is modified with the detection of mercury as disclosed by Kawakami in order to remove the mercury more effectively.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHRISTINE CHEN whose telephone number is (571)270-3590. The examiner can normally be reached on Monday-Friday 8:30am-5pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Roy King/

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Supervisory Patent Examiner, Art
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